

Bending Light Simulation
AP Physics

30 Points Total

Instructions and Rubric:

-Intro tab:

1. Measure the intensity of the light that goes through the water and the intensity of the light that is reflected off the water's surface for five different angles, with air as the top material and water as the bottom material (5 points).
2. Repeat part 1 for top material as air and the bottom material as glass (5 points).
3. Which material has a greater intensity reflected off the material (1 point)? Why (2 points)?
4. Which material has a greater intensity going through the material (1 point)? Why (2 points)?
5. Change the laser view from ray to wave. What happens to the frequency of the light/dark lines in the laser beam (1 point)?

-Prism Break tab

6. Click the 'show normal' and 'show protractor' buttons. Turn the laser on, and place the triangular prism in the path of the beam. The light will change directions twice; at what angles does the light change to each time it strikes a surface (4 points)? Use the protractor to measure from the normal (the dashed lines).
7. Change the angle of the laser so that the beam leaves the prism through the bottom side instead of the right side. What angles (there will be six of them) does the light change to when it strikes a surface (6 points)?
8. Click 'reset all' to take the simulation back to its original state. Turn the laser on, and place the very top of the circular prism in the beam's path. Click the 'show reflections' button, and describe what is happening to the light beam as it enters the prism (3 points).